

Claims

We claim:

1. An automated semiconductor parametric test system, comprising:
a control module operable to control concurrently operation of semiconductor test equipment and operation of parametric test instrumentation.
2. The automated semiconductor parametric test system of claim 1, wherein the control module is implemented in software executable within the automated semiconductor parametric test system.
3. The automated semiconductor parametric test system of claim 1, wherein the control module is implemented in electronic hardware.
4. The automated semiconductor parametric test system of claim 1, wherein the semiconductor test equipment comprises at least one of a wafer loader, a wafer positioner, a wafer chuck, a wafer tray loader, and a prober.
5. The automated semiconductor parametric test system of claim 1, wherein the parametric test instrumentation comprises at least one parametric test instrument having at least one test probe or test receptacle.
6. The automated semiconductor parametric test system of claim 1, wherein operation of the parametric test instrumentation comprises operation of a test equipment module, the test equipment module operable to facilitate control of the semiconductor test equipment.
7. The automated semiconductor parametric test system of claim 1, wherein operation of the parametric test instrumentation comprises operating a parametric test instrumentation module, the parametric test instrumentation module operable to

facilitate control of the parametric test instrumentation.

8. The automated semiconductor parametric test system of claim 1, wherein operation of the parametric test instrumentation comprises operating a semiconductor test parameter module.

9. The automated semiconductor parametric test system of claim 1, wherein the control module is further operable to concurrently manage test data.

10. The automated semiconductor parametric test system of claim 1, wherein the control module is further operable to provide fault-tolerant control of the test state via a state oscillator module, the state oscillator module operable to control the state of other system modules.

11. The automated semiconductor parametric test system of claim 10, wherein the state oscillator module changes the state of other system modules.

12. The automated semiconductor parametric test system of claim 10, wherein operation of the state oscillator module is controlled in synchronization with other system events by the control module.

13. The automated semiconductor parametric test system of claim 10, wherein the state oscillator module is operable to control module states within the system during operational superstates including an abort superstate, a pause superstate, and a lot run superstate; each superstate comprising an ordered sequence of states.

14. An automated semiconductor parametric test system, comprising:
a control module operable to control concurrently operation of semiconductor test equipment and operation of parametric test instrumentation;
a state oscillator module, the state oscillator module controlled by the control

module and operable to control the state of other system modules;

a parametric test equipment module, the parametric test equipment module operable to facilitate control of the semiconductor parametric test equipment; and

a test instrumentation module, the test instrumentation module operable to facilitate control of the parametric test instrumentation.

15. An automated semiconductor parametric test system, comprising:

a control module operable to control concurrently motion of semiconductor test equipment and operation of parametric test instrumentation, the control module implemented in software executing on a computerized system;

a state oscillator module, the state oscillator module controlled by the control module and operable to control the state of other system modules in synchronization with other system events;

a parametric test equipment module, the parametric test equipment module operable to facilitate control of the semiconductor parametric test equipment, wherein the semiconductor parametric test equipment comprises at least one of a wafer loader, a wafer positioner, a wafer chuck, a wafer tray loader, and a prober; and

a test instrumentation module, the test instrumentation module operable to facilitate control of the parametric test instrumentation, wherein the parametric test instrumentation comprises at least one of a test probe and a semiconductor test parameter module.

16. An automated semiconductor parametric test system controller, comprising:

a control module operable to control concurrently operation of semiconductor test equipment and operation of parametric test instrumentation.

17. The automated semiconductor parametric test system controller of claim 16, wherein the semiconductor test equipment comprises at least one of a wafer loader, a wafer positioner, a wafer chuck, a wafer tray loader, and a prober.

18. The automated semiconductor parametric test system controller of claim 16, wherein the parametric test instrumentation comprises at least one parametric test instrument having at least one test probe or test receptacle.

19. The automated semiconductor parametric test system controller of claim 16, wherein operation of the parametric test instrumentation comprises operation of a test equipment module, the test equipment module operable to facilitate control of the semiconductor test equipment.

20. The automated semiconductor parametric test system controller of claim 16, wherein operation of the parametric test instrumentation comprises operating a parametric test instrumentation module, the parametric test instrumentation module operable to facilitate control of the parametric test instrumentation.

21. The automated semiconductor parametric test system controller of claim 16, wherein operation of the parametric test instrumentation comprises operating a semiconductor test parameter module.

22. The automated semiconductor parametric test system controller of claim 16, wherein the control module is further operable to concurrently manage test data.

23. The automated semiconductor parametric test system controller of claim 16, wherein the control module is further operable to provide fault-tolerant control of the test state via a state oscillator module, the state oscillator module operable to control the state of other system modules.

24. The automated semiconductor parametric test system controller of claim 23, wherein the state oscillator module changes the state of other system modules.

25. The automated semiconductor parametric test system controller of claim 23, wherein operation of the state oscillator module is controlled in synchronization with other system events by the control module.

26. The automated semiconductor parametric test system controller of claim 23, wherein the state oscillator module is operable to control module states within the system during operational superstates including an abort superstate, a pause superstate, and a lot run superstate; each superstate comprising an ordered sequence of states.

27. An automated semiconductor parametric test system controller, comprising:
a control module operable to control concurrently operation of semiconductor test equipment and operation of parametric test instrumentation;

a state oscillator module, the state oscillator module controlled by the control module and operable to control the state of other system modules;

a parametric test equipment module, the parametric test equipment module operable to facilitate control of the semiconductor parametric test equipment; and

a test instrumentation module, the test instrumentation module operable to facilitate control of the parametric test instrumentation.

28. An automated semiconductor parametric test system controller, comprising:
a control module operable to control concurrently motion of semiconductor test equipment and operation of parametric test instrumentation, the control module implemented in software executing on the semiconductor parametric test system controller;

a state oscillator module, the state oscillator module controlled by the control module and operable to control the state of other system modules in synchronization with other system events;

a parametric test equipment module, the parametric test equipment module operable to facilitate control of the semiconductor parametric test equipment, wherein the semiconductor parametric test equipment comprises at least one of a wafer loader, a

wafer positioner, a wafer chuck, a wafer tray loader, and a prober; and

a test instrumentation module, the test instrumentation module operable to facilitate control of the parametric test instrumentation, wherein the parametric test instrumentation comprises at least one of a test probe and a semiconductor test parameter module.

29. A method of controlling a semiconductor parametric test system, comprising:
controlling concurrently via a control module operation of semiconductor test equipment and operation of parametric test instrumentation.
30. The method of controlling a semiconductor parametric test system of claim 29, wherein the control module is implemented in software.
31. The method of controlling a semiconductor parametric test system of claim 29, wherein the control module is implemented in electronic hardware.
32. The method of controlling a semiconductor parametric test system of claim 29, wherein the semiconductor test equipment comprises at least one of a wafer loader, a wafer positioner, a wafer chuck, a wafer tray loader, and a prober.
33. The method of controlling a semiconductor parametric test system of claim 29, wherein the parametric test instrumentation comprises at least one parametric test instrument having at least one test probe or test receptacle.
34. The method of controlling a semiconductor parametric test system of claim 29, wherein operation of the parametric test instrumentation comprises operation of a test equipment module, the test equipment module operable to facilitate control of the semiconductor test equipment.

35. The method of controlling a semiconductor parametric test system of claim 29, wherein operation of the parametric test instrumentation comprises operating a parametric test instrumentation module, the parametric test instrumentation module operable to facilitate control of the parametric test instrumentation.

36. The method of controlling a semiconductor parametric test system of claim 29, wherein operation of the parametric test instrumentation comprises operating a semiconductor test parameter module.

37. The method of controlling a semiconductor parametric test system of claim 29, wherein the control module is further operable to concurrently manage test data.

38. The method of controlling a semiconductor parametric test system of claim 29, wherein the control module is further operable to provide fault-tolerant control of the test state via a state oscillator module, the state oscillator module operable to control the state of other system modules.

39. The method of controlling a semiconductor parametric test system of claim 38, wherein the state oscillator module changes the state of other system modules.

40. The method of controlling a semiconductor parametric test system of claim 38, wherein operation of the state oscillator module is controlled in synchronization with other system events by the control module.

41. The method of controlling a semiconductor parametric test system of claim 38, wherein the state oscillator module is operable to control module states within the system during operational superstates including an abort superstate, a pause superstate, and a lot run superstate; each superstate comprising an ordered sequence of states.

42. A method of controlling a semiconductor parametric test system, comprising:
controlling concurrently via a control module operation of semiconductor test equipment and operation of parametric test instrumentation;
controlling the state of at least one other system module via a state oscillator module, the state oscillator module controlled by the control module;
providing control of the semiconductor parametric test equipment via operation of a parametric test equipment module; and
providing control of the parametric test instrumentation via operation of a test instrumentation module.
43. A method of controlling a semiconductor parametric test system, comprising:
controlling concurrently, via a control module implemented in software and executing on a computerized system, motion of semiconductor test equipment and operation of parametric test instrumentation;
controlling the state of at least one other system module via a state oscillator module, the state oscillator module controlled by the control module and operable to control the state of other system modules in synchronization with other system events;
providing control of the semiconductor parametric test equipment via operation of a parametric test equipment module, wherein the semiconductor parametric test equipment comprises at least one of a wafer loader, a wafer positioner, a wafer chuck, a wafer tray loader, and a prober; and
providing control of the parametric test instrumentation via operation of a test instrumentation module, wherein the parametric test instrumentation comprises at least one of a test probe and a semiconductor test parameter module.
44. A machine-readable medium with instructions stored thereon, the instructions when executed operable to cause a computerized system to control a semiconductor parametric test system by:
controlling concurrently via a control module operation of semiconductor test equipment and operation of parametric test instrumentation.

45. The machine-readable medium of claim 44, wherein the control module is implemented in software.
46. The machine-readable medium of claim 44, wherein the control module is implemented in electronic hardware.
47. The machine-readable medium of claim 44, wherein the semiconductor test equipment comprises at least one of a wafer loader, a wafer positioner, a wafer chuck, a wafer tray loader, and a prober.
48. The machine-readable medium of claim 44, wherein the parametric test instrumentation at least one parametric test instrument having at least one test probe or test receptacle.
49. The machine-readable medium of claim 44, wherein operation of the parametric test instrumentation comprises operation of a test equipment module, the test equipment module operable to facilitate control of the semiconductor test equipment.
50. The machine-readable medium of claim 44, wherein operation of the parametric test instrumentation comprises operating a parametric test instrumentation module, the parametric test instrumentation module operable to facilitate control of the parametric test instrumentation.
51. The machine-readable medium of claim 44, wherein operation of the parametric test instrumentation comprises operating a semiconductor test parameter module.
52. The machine-readable medium of claim 44, wherein the control module is further operable to concurrently manage test data.

53. The machine-readable medium of claim 44, wherein the control module is further operable to provide fault-tolerant control of the test state via a state oscillator module, the state oscillator module operable to control the state of other system modules.

54. The machine-readable medium of claim 53, wherein the state oscillator module changes the state of other system modules.

55. The machine-readable medium of claim 53, wherein operation of the state oscillator module is controlled in synchronization with other system events by the control module.

56. The machine-readable medium of claim 53, wherein the state oscillator module is operable to control module states within the system during operational superstates including an abort superstate, a pause superstate, and a lot run superstate; each superstate comprising an ordered sequence of states.

57. A machine-readable medium with instructions stored thereon, the instructions when executed operable to cause a computerized system to control a semiconductor parametric test system by:

controlling concurrently via a control module operation of semiconductor test equipment and operation of parametric test instrumentation;

controlling the state of at least one other system module via a state oscillator module, the state oscillator module controlled by the control module;

providing control of the semiconductor parametric test equipment via operation of a parametric test equipment module; and

providing control of the parametric test instrumentation via operation of a test instrumentation module.

58. A machine-readable medium with instructions stored thereon, the instructions when executed operable to cause a computerized system to control a semiconductor parametric test system by:

controlling concurrently, via a control module implemented in software and executing on a computerized system, motion of semiconductor test equipment and operation of parametric test instrumentation;

controlling the state of at least one other system module via a state oscillator module, the state oscillator module controlled by the control module and operable to control the state of other system modules in synchronization with other system events;

providing control of the semiconductor parametric test equipment via operation of a parametric test equipment module, wherein the semiconductor parametric test equipment comprises at least one of a wafer loader, a wafer positioner, a wafer chuck, a wafer tray loader, and a prober; and

providing control of the parametric test instrumentation via operation of a test instrumentation module, wherein the parametric test instrumentation comprises at least one of a test probe and a semiconductor test parameter module.